Amendments to th Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (*Currently amended*) Apparatus for the delivery of ions generated at atmospheric pressure to a mass spectrometer having a vacuum system with an entrance opening, the apparatus comprising
(a) ~~means for generating~~ an ion generator that generates an ionization cloud containing ~~charged particles~~ ions at atmospheric pressure,
(b) ~~an entrance opening in the wall of the vacuum system of the mass spectrometer,~~
~~(c)~~ an ion migration drift tube between the ionization ~~cloud~~ generator and the entrance opening, the drift tube receiving the ionization cloud,
~~(d) means for producing~~ (c) a field-generating apparatus that produces a potential gradient inside the ion migration drift tube that draws ions of the ionization cloud toward the entrance opening, and
~~(e) means to generate~~ (d) a gas port through which a ~~counterstream of~~ gas ~~inside~~ may be introduced to the ion migration drift tube in a direction opposite to a direction of ion travel.

2. (*Currently amended*) Apparatus according to Claim 1 wherein ~~means for electrospraying generate the ionization cloud by spraying~~ the ion generator comprises an electrospray apparatus with a spray capillary that sprays a solution containing analyte molecules.

3. (*Original*) Apparatus according to Claim 2 wherein a pneumatic gas device supports the spraying.

4. (*Currently amended*) Apparatus according to Claim 2 ~~wherein~~ further comprising an arrangement of electrodes and power supplies that produce a strong electric field in front of the spray capillary.

5. (*Currently amended*) Apparatus according to Claim 1 wherein the ion generator comprises a pulse laser that forms an ionization cloud by laser desorption.

6. (*Currently amended*) Apparatus according to Claim 1 ~~wherein a gas supply device admixes~~ further comprising a ionization gas input path through which gaseous substances may be admixed to the ionization cloud prior to its entry into the drift tube.

7. (*Currently amended*) Apparatus according to Claim 1 ~~wherein~~ further comprising a needle for producing corona discharge ~~is arranged~~ in the vicinity of the ionization cloud.

8. (*Currently amended*) Apparatus according to Claim 1 ~~wherein~~ further comprising a UV lamp for photoionization ~~is arranged~~ in the vicinity of the ionization cloud.

9. (*Currently amended*) Apparatus according to Claim 1 ~~wherein~~ further comprising an electron source ~~is arranged~~ in the vicinity of the ionization cloud.

10. (*Original*) Apparatus according to Claim 9 wherein the electron source contains a foil emitting beta radiation.

11. (*Currently amended*) Apparatus according to Claim 1 wherein ~~a gas supply introduces the protective or drying~~ the gas port introduces gas into the drift tube near the entrance opening of the mass spectrometer.

12. (*Currently amended*) Apparatus according to Claim 11 wherein ~~a heating device heats~~ the ~~drying~~ gas introduced through the gas port is heated before introduction into the drift tube.

13. (*Currently amended*) Apparatus according to Claim 1 wherein the ~~wall of~~ the ion migration drift tube ~~is provided with~~ comprises a ~~large number~~ plurality of electrodes ~~to~~ that produce the potential gradient in the drift tube.

14. (*Currently amended*) Apparatus according to Claim 1 wherein the ion migration drift tube ~~is made from or coated with~~ comprises a resistance material.

15. (*Currently amended*) Apparatus according to Claim 1 wherein the ion migration drift tube has a conical or trumpet shape ~~where the~~ with a wider opening ~~is~~ being directed towards the ~~ionization cloud~~ ion generator.

16. (*Currently amended*) Apparatus according to Claim 1 wherein ~~the~~ an opening of the ion migration drift tube ~~to the spray chamber~~ facing the ion generator is covered by a grid which bulges outwards.

17. (*Currently amended*) Apparatus according to Claim 1 wherein the entrance opening ~~belongs to~~ is part of a transfer capillary, and wherein ~~the~~ an outer shape of ~~the~~ a tip of the transfer capillary is ~~curved with a small radius of the inscribed vertex circle~~ convex.

18. (*Currently amended*) Apparatus according to Claim 1 wherein the entrance opening ~~has a smoothed, slightly funnel-shaped or trompet-shaped form~~ approximates a funnel shape.

19. (*Currently amended*) Apparatus according to Claim 1 ~~wherein a device~~ further comprising a ionization gas input path through which a hot drying gas and charged particles may be ~~admixes particles to the hot drying gas~~ admixed to the ionization cloud, the particles having a charge that allows them ~~being able~~ to neutralize ~~some of the~~ ions in the spray chamber or later in the drift tube.

20. (*Currently amended*) Apparatus according to Claim 1 wherein the ion migration drift tube ~~is meander, spiral or helix shaped or is bent in some other shape~~ has a curved shape.

21. (*Currently amended*) Apparatus according to Claim 1 wherein the ion migration drift tube is a first drift tube, and wherein the apparatus further comprises additional drift tubes such that the ~~several~~ ion migration drift tubes are connected to one another~~, either straight or arranged at an angle to each other~~.

22. (*Currently amended*) Apparatus according to Claim 1 wherein the ~~entrance grid of the~~ ion migration drift tube comprises an entrance grid that consists of a pattern of wires with switchable voltage supplies connected to the wires to ~~either allow or hinder ions to enter~~ control ion entry into the ion migration drift tube.

23. (*Currently amended*) Method for feeding ions at atmospheric pressure to a mass spectrometer, the method comprising the following steps:
(a) forming an ionization cloud containing charged particles at atmospheric pressure,
(b) guiding the charged particles by their ion mobility through an ion migration drift tube with an inner potential gradient to ~~the~~ an entrance opening of the mass spectrometer, and
(c) blowing ~~clean protective~~ gas ~~or drying gas~~ into the ion migration drift tube ~~at the side of~~ from adjacent the entrance opening.

24. (*Original*) Method according to Claim 23 wherein the ionization cloud is created by spraying a solution containing dissolved analyte from a spray capillary.

25. (*Original*) Method according to Claim 24 wherein the spraying is pneumatically supported by a spray gas.

26. (*Currently amended*) Method according to Claim 24 ~~wherein~~ further comprising drawing charged droplets into the ionization cloud using a strong electric field in front of the spray capillary ~~draws charged droplets into the ionization cloud~~.

27. (*Original*) Method according to Claim 23 wherein the ionization cloud is created by bombardment of a sample with light from a pulsed laser.

28. (*Currently amended*) Method according to Claim 23 ~~wherein~~ further comprising admixing other gaseous substances ~~are admixed~~ to the ionization cloud.

29. (*Currently amended*) Method according to Claim 23 ~~wherein~~ further comprising providing a corona discharge that produces primary ions in the vicinity of the ionization cloud which lead to chemical ionization of the analyte molecules via a chain of ion-molecule reactions.

30. (*Currently amended*) Method according to Claim 23 ~~wherein~~ further comprising using a UV lamp ~~contributes to~~ for ionizing ~~the~~ substances in the ionization cloud.

31. (*Currently amended*) Method according to Claim 23 ~~wherein~~ further comprising using an electron source ~~contributes to~~ for ionizing ~~the~~ substances in the ionization cloud.

32. (*Currently amended*) Method according to Claim 31 wherein a foil emitting beta radiation is used as ~~an~~ the electron source.

33. (*Currently amended*) Method according to Claim 23 wherein the ~~protective or drying~~ gas is introduced into the drift tube ~~in the neighborhood of the entrance opening of the mass spectrometer and flows through the drift tube in the direction of the ionization cloud~~ in a direction opposite the travel direction of the charged particles.

34. (*Currently amended*) Method according to Claim 33 wherein the ~~protective or drying~~ gas is heated before being introduced into the drift tube.

35. (*Currently amended*) Method according to Claim 23 ~~wherein~~ further comprising admixing charged particles ~~are admixed~~ to the ~~hot drying~~ gas, whereby the particles neutralize some of the ions ~~which are formed in the spray chamber or later~~ in the drift tube.

36. (*Currently amended*) Method according to Claim 35 ~~wherein the~~ further comprising irradiating an area around the entrance opening ~~is radiated~~ with UV radiation ~~releasing~~ to release photoelectrons ~~from the head of the transfer capillary which lead to neutralization of the~~ that neutralize ions ~~in the outer region of the ion trail~~.

37. (*Currently amended*) Method according to Claim 23 wherein the charged particles are ~~generated or~~ admitted into the drift tube as pulses, and ~~wherein~~ the drift tube ~~thus~~ operates as an ion mobility spectrometer, and wherein the mass spectrometer measures ion of different mobilities separately.